

# Deviated nasal septum and its association with chronic maxillary sinusitis

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## Abstract

**Background:** Deviated nasal septum is a very common finding in ENT clinic, most of the times, as incidental findings without any related symptom. Sometimes it present in association with suspiciously related sinusitis. Our study is to identify the possible association between deviated nasal septum and maxillary sinusitis. **Methods:** A prospective observational study. The standard procedure of examination of ear, nose, throat, oral, face and neck was carried out on each patient. Deviated nasal septum was diagnosed after detailed history and meticulous examination of nose. After clinical examination all cases were screened for maxillary sinusitis using roentgenographic evaluation of paranasal sinuses. **Results:** This study comprises of 300 patients attending our outpatient department of ENT. We studied 300 patients, 210 males and 90 females. The highest incidence of deviated nasal septum was in age group 21 to 30 years (38%). The youngest patient recorded is 8 years, while oldest is 60 years. (Table 1). The present study revealed higher incidence of deviated nasal septum in males (70%) than females (30%) with ratio of 2.33:1. The highest incidence of deviated nasal septum is 'C' shaped is 82%, While 'S' shaped is 2%, spur is 14% and Anterior deviation is 2%. The commonest symptom was nasal obstruction in 64% which was unilateral in 54% cases and 10% bilaterally. Next common complaint was frequent attacks of common cold in 52% of cases and recurrent headaches in 44%. 4. 8% of cases had Nasal discharge. While 4% had Nasal deformity, 4% cases had mouth breathing, 2% cases had epistaxis and 2% cases loss of smell. Maxillary sinus was involved in 62% of cases. It was noted that the maxillary sinus on same side and opposite side to that of septal deviation was involved in 10% and bilateral sinusitis was observed in 42% of cases. **Conclusions:** According to our finding, there is significant association observed between deviated nasal and maxillary sinusitis. Attributing sinuses disease to deviated nasal septum may lead to over treatment of the patient and unnecessary surgery.

**Keywords:** Deviated septum, Sinusitis, mouth breathing, epistaxis.

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## INTRODUCTION

The nasal septum is an important functional and aesthetic structure of the nose. It is responsible for regulating airflow through the nose while lending shape and support to the

nose.<sup>1</sup> Deviated nasal septum (NSD) can be described as an asymmetry of the nasal septum. Both traumatic deviation and growth-associated abnormalities of the nasal septum may lead to significant airway obstruction and also cosmetic deformity.<sup>2</sup> Paranasal sinuses (PNS) are the air containing spaces in skull. They help to lighten the skull, perform the function of humidification of air and provide resonance to voice.<sup>3</sup> Deviated nasal septum is most common cause of maxillary sinusitis. Deviated nasal septum produces nasal obstruction, which obstructs the ostia of the sinus and also ostia that are located high on the superomedial wall. Also this is a poor location for natural drainage of the sinus especially when the mucous membrane is congested. The ostia are obstructed resulting in the stagnation of secretion in the sinus and infection follows. This being a relatively common condition, it was

decided to study at least 300 cases of deviated nasal septum and to correlate its association with maxillary sinusitis.

**MATERIALS AND METHODS**

This study comprises of 300 patients attending our out patient department of ENT, MGM Medical College and hospital, Aurangabad. All cases were studied prospectively to obtain data. All patients selected with deviated nasal septum after carefully excluding all cases with history of trauma, any intra or extra nasal surgery, intra or extra nasal malignancy, nasopharyngeal irradiation or any associated nasal pathology. A detailed history of his/her complaints was taken under the various headings mentioned in the proforma. The standard procedure of examination of ear, nose, throat, oral, face and neck was carried out on each patient. Deviated nasal septum was diagnosed after detailed history and meticulous examination of nose. After clinical examination all cases were screened for maxillary sinusitis using roentgenographic evaluation of paranasal sinuses

**OBSERVATION AND RESULTS**

All the patients who attended the E.N.T. OPD were thoroughly examined and out of these cases of deviated nasal septum are being reported here, in whom the symptoms were attributed to the septal deviation. The highest incidence of deviated nasal septum was in age group 21 to 30 years (38%). The youngest patient recorded is 8 years, while oldest is 60 years. (Figure 1).The present study revealed higher incidence of deviated nasal septum

in males (70%) than females (30%) with ratio of 2.33:1(Figure 2) Both the left and right sided deviation were present in both sex, male predominating in both types of deviation. The deviation towards right was commoner of the two being present in 50%, while 48% of the patients showed deviation towards left and 2% presented bilaterally. (Figure 3) In the present study various types of deviated nasal septum had revealed. The highest incidence of deviated nasal septum is 'C' shaped is 82%, While 'S' shaped is 2%, spur is 14% and Anterior deviation is 2%. (Figure 4) The different complaint of patient suffering from deviated nasal septum in order of frequency was recorded. The commonest symptom was nasal obstruction in 64% which was unilateral in 54% cases and 10% bilaterally. Next common complaint was frequent attacks of common cold in 52% of cases and recurrent headaches in 44%. 4. 8% of cases had Nasal discharge. While 4% had Nasal deformity, 4% cases had mouth breathing, 2% cases had epistaxis and 2% cases loss of smell. (Figure 5) Maxillary sinus was involved in 62% of cases. It was noted that the maxillary sinus on same side and opposite side to that of septal deviation was involved in 10% and bilateral sinusitis was observed in 42% of cases. (Figure 6) The present study revealed that in 50% of the cases have unilateral inferior turbinate hypertrophy and in which 36% cases showing opposite side hypertrophy and only 14% cases showing same side inferior turbinate hypertrophy.12% cases showing bilateral inferior turbinate hypertrophy.38% showing normal appearance of inferior turbinate. (Figure 7).

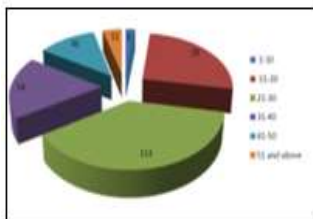


Figure 1

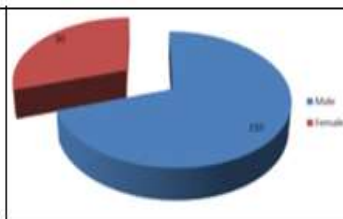


Figure 2

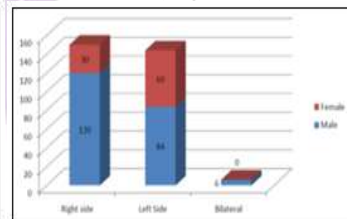


Figure 3

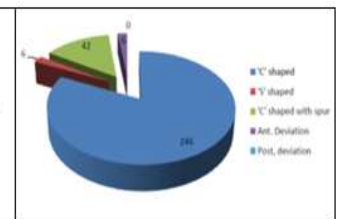


Figure 4

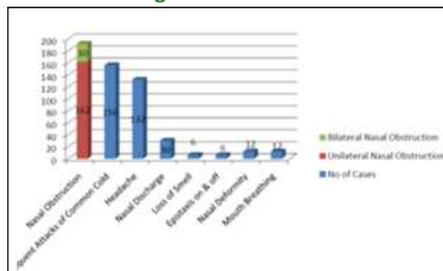


Figure 5

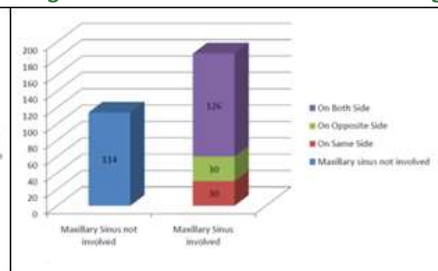


Figure 6

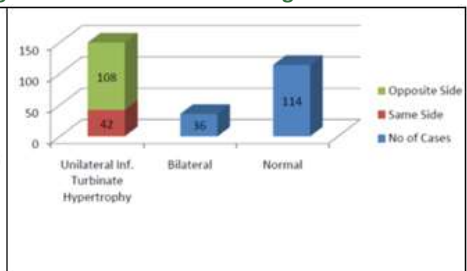


Figure 7

Figure 1: The incidence of deviated nasal septum; Figure 2: Shows higher incidence of deviated nasal septum in males (70%) than females (30%) with ratio of 2.33:1; Figure 3: Shows sex and side relationship; Figure 4: Shows the different types of deviated nasal septum; Figure 5: Shows various symptoms in order of frequency; Figure 6: Shows maxillary sinus affection in the cases of deviated nasal septum; Figure 7: Showing the inferior turbinate hypertrophy in cases of deviated nasal septum

## DISCUSSION

The patient complaining of a blocked nose is an extremely common presentation in the Otorhinolaryngology outpatient department and one of the important diagnostic possibilities includes deviated nasal septum. Among the local causes which can produce obstruction in nose, nasal septal deformity is most important which either directly initiates a disturbance in the physiology of nose or can aggravate to severity of other nasal symptoms. The symptoms, associated with deviated nasal septum are as difficulties in breathing through the nose, nasal congestions, sinus infections, nosebleeds, sleep problems, headache, and postnasal drip.<sup>4 5</sup> Various etiology factors may contribute for the development of deviated nasal septum which can be classified as congenital, genetic effects causing aberrant growth, trauma, infection, or nasal cavity neoplasms.<sup>6 7</sup> The present study was done on 300 selected cases of deviated nasal septum. Only those cases were included in whom the symptoms were attributable to the septal deformity. Special attention was paid to maxillary sinus affection, so as to establish the role of deviated nasal septum in causation of maxillary sinusitis. The diagnosis of maxillary sinusitis was made on the basis of roentgenographic evaluation of paranasal sinuses. The earlier workers have reported a definite incidence of deviated nasal septum, suggesting thereby that straight septa could be seen in many. But still most of the authors claim that it is rare for the nasal septum to be absolutely in midline. This view received slight modification and it was stated the posterior border of nasal septum is never deviated, no matter how severe the deflection is present in the anterior part (Gray 1978; Scott, 1956).<sup>8 9</sup> It seems that the focus of attention in the recent studies have been shown towards finding out the incidence of deviated nasal septum in the general population. This possibility suggests that majority of the authors believed that the septal deviation may be considered to be present in all but it gains significance only when it is severe enough to cause disturbance in the physiology of nose and becomes symptomatic. In the present study the higher incidence found in age group of 21-30 years. The youngest patient recorded is of 8 years, while oldest is 60 years. This can be compared to a study done by Poore and Gupta.<sup>10</sup> The present study revealed that septal deformities are more common in males 70% than in female 30% ratio being 2.33:1 (M/F) which can be compared with the study done by Shoib *et al.* In which there were 112 males and 88 females showing a male predominance.<sup>11</sup> In the present study males showed higher incidences (40%) of Septal deviation on right side and (28%) in left side (total is 68%) while deviation was on left side in male (10%) and (20%) in females on left sides and both side only 2% in males. In the study by Clark G. Wallace C: (1970) the sex ratio for

the right sided deviation was 1.2:1 (M:F) and that for left side deviations was 10.5:1(M:F), thereby showing that right sided deviations were more common in females as compared to males.<sup>12</sup> The above mentioned sex ratio could be explained on the basis of the fact that deviation of septum is in itself more common in males than females and this preponderance is well maintained when the side of deviation is considered. In the present study all the nasal and extranasal symptoms presented in cases of deviated nasal septum. The various symptoms pertaining to nose were nasal obstructions in 64%, frequent attacks of common cold 52%, headache 44%, nasal discharge 10%, nasal deformity 4%, mouth breathing 4%, epistaxis 2% and loss of smell 2%. Nasal obstruction was felt on the side of deviation of septum and on the side of concavity because of hypertrophied turbinates. The study was done by Shoib *et al.* headache was seen in 186 patients (93%), nasal obstruction in 178 patients (89%), nasal discharge in 126 patients (63%), facial pain in 95 patients (47.5%), fever in 55 patients (27.5%), halitosis in 20 patients (10%), cough in 17 patients (8.5%), fatigue in 6 patients (3%).<sup>11</sup> In the study conducted by Singh headache was the predominant symptom seen in 80% of patients, nasal blockage was seen in 76.66%, nasal discharge in 43.33%, facial pain in 40% patients.<sup>13</sup> Majority of cases in the present study showed C type of deviation 82% and 2% as S shaped. Spurs found in 14% of cases 2% of case showed anterior deviation. Similar types of deformity described by shoeb *et al.* and Jadia S. *et al.*<sup>11,14</sup> In the present study maxillary sinus was found affected in 62% cases, in which on the side of deflection in 10% cases, on the concave side of septal deviation is also 10% cases, bilateral involvement of maxillary sinus was present in 42% cases. It is clear from our findings that bilateral involvement of maxillary sinus was of greater frequency than the side of septal deviation and also opposite of septal deviation. It is also clear from our findings that maxillary sinus on the side of septal deviation and opposite side of septal deviation was affected in equal frequency. In correlation with the same it is to be noted that the septal deviation in majority of cases were towards right side. On the whole it may be concluded that the maxillary sinusitis was found in 62% of cases in the present series, which in itself is a higher percentage as compared to the incidence of maxillary sinusitis in general. Therefore it can be concluded that deviated septum definitely produces definite predisposition to the maxillary sinusitis

## SUMMARY AND CONCLUSION

The present study revealed following facts-

1. The incidence of deviated nasal septum was found to be maximum in the age group of 21-30 years.

The incidence was found decreasing towards the extreme of age.

2. Males were affected more as compared to females 2.33:1.
3. 3. Right sided deviations were more common than the left sided deviations in males.
4. Left sided deviation were more common than the right sided deviation in females
5. On examination the most common finding was hypertrophy of inferior turbinate which was present on the side of septal deviation in 14% of cases and opposite to deviation in 36% of cases
6. The most common type of septal deformity was C type in 82% of cases. The associated deformities were spurs in 14% of cases.
7. The maxillary sinus was affected in 62% of cases, of which bilateral maxillary sinus involvement in 42% cases is more common than the side of deviation or opposite side of deviation. Therefore it can be concluded that deviated nasal septum predisposes to the development of maxillary sinusitis.

## REFERENCES

1. Aziz T. Effect of non-surgical maxillary expansion on the nasal septum deviation: a systematic review. *Progress in Orthodontics* (2015) 16:15
2. Kucybała I. Nasal Septal Deviation and Concha Bullosa – Do They Have an Impact on Maxillary Sinus Volumes and Prevalence of Maxillary Sinusitis? *Pol J Radiol*, 2017; 82: 126-133
3. Rajendra Kumar Narasipur Lingaiah *et al.*, Anatomical Variations of Paranasal Sinuses on Coronal CT-Scan. *International Journal of Anatomy, Radiology and Surgery*. 2016/21554:2192
4. Teixeira J., *et al.* “Nasal Septal Deviations: A Systematic Review of Classification Systems”. *Hindawi* (2016): 7089123.
5. Scadding G. “Rhinitis and Sinusitis”. Elsevier Public Health Emergency Collection (2009): 409-423.
6. Finkbohner R, Johnston D, Crawford ES, Coselli J, Milewicz DM: Marfan syndrome long-term survival and complications after aortic aneurysm repair. *Circulation* 1995, 91(3):728–733.
7. Pirsig W: Growth of the deviated septum and its influence on midfacial development. *Fac Plast Surg* 1992, 8(4):224–232.
8. Gray L.P.: Deviated nasal septum incidence and etiology. *Ann Otol Rhinol Laryngol Suppl.* 1978;3-20.
9. Scott, J.H. (1956) Growth at facial sutures. *American Journal of Orthodontics*, 42, 381-387.
10. Poorey VK, Gupta N *et al.* (2014) Endoscopic and computed tomographic evaluation of influence of nasal septal deviation on lateral wall of nose and its relation to sinus diseases. *Indian J Otolaryngol Head Neck Surg* 66(3):330–335
11. Shoib SM, Viswanatha B (2016) Association between symptomatic deviated nasal septum and sinusitis: a prospective study. *Res Otolaryngol* 5(1):1–8
12. Clark G. Wallace C: Analysis of nasal support, *Arch otolaryngology* 92:118,1970
13. Singh I *et al.* (2010) Chronic rinosinusitis and nasal polyposis in Nepal. *Clin Rhinol Int J* 3(2):87–91
14. Jadia S, Qureshi S, S Agrawal, Singh SG. Effect of Deviated Nasal Septum on Maxillary Sinus Volume and Occurrence of Sinusitis. *Indian J Otolaryngol Head Neck Surg* (November 2019) 71(Suppl 3):S1871–S1875.

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